

## AMENDMENTS TO THE CLAIMS

Please amend the claims as shown below. Claims 12, 19, 25, and 27-29 are amended, claims 31-36 are new, and claim 26 is cancelled. A complete set of the claims, showing their current status, is provided below.


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1-11. (Cancelled)

12. (Currently amended) A method for producing an islet insulin-producing cell *in vitro*, the method comprising:

introducing a nucleic acid molecule operably linked to a promoter into a precursor cell *in vitro*, the nucleic acid molecule encoding ~~an~~ a neuroendocrine class B basic helix-loop-helix (bHLH) islet transcription factor, said introducing being in an amount sufficient for production of the islet transcription factor and production of an insulin-producing cell islet-cells.

13. (Original) The method of claim 12, wherein the islet transcription factor is neurogenin3.

 14. (Withdrawn) The method of claim 12, wherein the islet transcription factor is a positive regulator of a neurogenin3 (Ngn3) regulatory pathway.

15. (Withdrawn) The method of claim 14, wherein the islet transcription factor is selected from the group consisting of HNF1, HNF3, and HNF6.

16. (Withdrawn) The method of claim 12, wherein the islet transcription factor is a neuroendocrine bHLH transcription factor selected from the group consisting of a neurogenin1, neurogenin2, NeuroD1/BETA2, neuroD2, math2, NeuroD4/Math3, math1/ATOH1, mash1/ASCL1/ASH1, and mash2.

17. (Cancelled)

18. (Currently amended) The method of claim 12, wherein the insulin-producing cell islet

cells produced is an insulin-producing islet cell ~~are beta-cells~~.

19. **(Currently amended)** A method for producing a mammalian ~~islet~~ insulin-producing cell *in vitro*, the method comprising the steps of:

introducing into a mammalian cell *in vitro* a nucleic acid molecule operably linked to a promoter, the nucleic acid molecule encoding ~~an~~ a neuroendocrine class B bHLH islet transcription factor, said introducing providing for expression of the transcription factor in the mammalian cell and production of ~~the islet cell phenotype~~ insulin in the mammalian cell.

20. **(Original)** The method of claim 19, wherein the mammalian cell is a pancreatic cell.

21. **(Original)** The method of claim 19, wherein the islet transcription factor is neurogenin3.

22. **(Withdrawn)** The method of claim 19, wherein the islet transcription factor is a positive regulator of a neurogenin3 (Ngn3) regulatory pathway.

23. **(Withdrawn)** The method of claim 19, wherein the islet transcription factor is a neuroendocrine bHLH transcription factor selected from the group consisting of a neurogenin1, neurogenin2, NeuroD1/BETA2, neuroD2, math2, NeuroD4/Math3, math1/ATOH1, mash1/ASCL1/ASH1, and mash2.

24. **(Cancelled)**

25. **(Currently amended)** A method for producing a mammalian insulin-producing islet beta cell *in vitro*, the method comprising the steps of:

introducing into a mammalian pancreatic cell *in vitro* a nucleic acid molecule operably linked to a promoter, a nucleic acid molecule encoding neurogenin3 (Ngn3), said introducing providing for expression of Ngn3 in the cell and production of ~~the an islet beta cell phenotype~~ insulin in the cell.

26. **(cancelled)**

27. **(Currently amended)** A method for delivering insulin to the bloodstream of a mammalian subject, the method comprising:

introducing an insulin-producing islet cell produced by the method of claim 25 into a ~~pancreas~~ ~~of a~~ mammalian subject, said introducing providing for production of insulin by the insulin-producing islet cell and delivery of insulin to the bloodstream of the mammalian subject.

28. **(Currently amended)** A method for delivering insulin to the bloodstream of a mammalian subject, the method comprising:

introducing an insulin-producing islet cell produced by the method of claim 12 into a ~~pancreas~~ ~~of a~~ mammalian subject, said introducing providing for production of insulin by the insulin-producing islet cell and delivery of insulin to the bloodstream of the mammalian subject.

29. **(Currently amended)** A method for delivering insulin to the bloodstream of a mammalian subject, the method comprising:

introducing an insulin-producing islet cell produced by the method of claim 19 into a pancreas of a mammalian subject, said introducing providing for production of insulin by the insulin-producing islet cell and delivery of insulin to the bloodstream of the mammalian subject.

30. **(Previously added)** The method of claim 12, where the precursor cell is an adult pancreatic cell.

31. **(New)** The method of claim 12, wherein said bHLH islet transcription factor is a neuroendocrine bHLH transcription factor.

32. **(New)** The method of claim 31, wherein said neuroendocrine bHLH transcription factor is selected from the group consisting of neurogenin1, neurogenin2, neurogenin3, NeuroD1/BETA2, neuroD2, math2, NeuroD4/Math3, math1/ATOH1, mash1/ASCL1/ASH1, and mash2.

33. **(New)** The method of claim 31, wherein said neuroendocrine bHLH transcription factor is selected from the group consisting of neurogenin3, neuroD1 and mash1.

34. (New) The method of claim 19, wherein said bHLH islet transcription factor is a neuroendocrine bHLH transcription factor.

35. (New) The method of claim 34, wherein said neuroendocrine bHLH transcription factor is selected from the group consisting of neurogenin1, neurogenin2, neurogenin3, NeuroD1/BETA2, neuroD2, math2, NeuroD4/Math3, math1/ATOH1, mash1/ASCL1/ASH1, and mash2.

36. (New) The method of claim 35, wherein said neuroendocrine bHLH transcription factor is selected from the group consisting of neurogenin3, neuroD1 and mash1.

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